

Recent Accomplishments and Research Priorities for 2006 FY 2001-2006

I. Research to support fishery conservation management

Recent Accomplishments:

SEFSC has successfully incorporated “risk assessment,” “uncertainty,” and the new SFA guidelines on “overfished” and “overfished status” into stock assessment methodologies for numerous species in the Gulf of Mexico, Atlantic, and Caribbean.

The development of the red snapper rebuilding plan was based on SEFSC scientific efforts.

The Center is recognized for its expertise in the fields of habitat research and restoration and has successfully developed criteria to define and assess areas of EFH.

SEFSC completed baseline data collection essential for the successful establishment of marine reserves in the Tortugas region for the Florida Keys National Marine Sanctuary and for the Dry Tortugas National Park.

Research Priorities, FY 2001-2006:

I.A. Biological research concerning the abundance and life history parameters of fish stocks

- Further efforts to improve the effectiveness of fishery resource management programs by refining the definition of stocks (including the “management unit” within species), and to determine data needs and analytical methods required for applying refined definitions.
- Develop and maintain high quality fishery-dependent and fishery independent long-term data sets for stock assessments. A main component of this effort will be the expanded use of at-sea observers on commercial and recreational fishing vessels to report on catch and bycatch. Emphasis will be on collecting a wide range of information, including biological and environmental data, gear type deployed, and method of deployment.
- Incorporate marine ecosystems data into conceptual models of food webs to link habitat to productivity and increase the Center’s ability to survey, inventory, and understand the

dynamics of marine systems and their biota.

- Continue to assess and monitor protected finfish species (e.g. jewfish and Nassau grouper).
- Conduct research on HMS stocks, particularly in the areas of stock identification, life history, and precautionary approach methodologies.
- Develop basic life history information and conduct assessments on fish stocks in support of management for the Councils (SAFMC, GMFMC, and CFMC) and Commissions (ASMFC, GSMFC).

I.B. Social and economic factors affecting abundance levels Social

- Expand sociological and economic research and incorporate results into the fishery anagement process.

I.C. Interdependence of fisheries or stocks of fish

- Increase our understanding of the interactions of protected species (e.g., sea turtles, marine mammals: bottlenose dolphin and large whales) and finfish candidate species (e.g., jewfish and Nassau grouper) with ongoing fisheries in the Southeast Region.
- Prevent the extinction and promote the recovery of marine species and at-risk populations through interventions and the continued development of recovery strategies.
- Develop scientific methodology for multi-species or ecosystem approaches towards the management of fishery resources, and where appropriate, transition from single-species approaches.

I.D. Identifying, restoring, and mapping of essential fish habitat (EFH)

- Define and characterize EFH and develop an understanding of natural and anthropogenic threats.

- Investigate downstream and coastal impacts of agricultural and urban activities and provide the technical basis for designing and implementing programs for ensuring sustainable coastal communities.
- Gain a better understanding of the structure and function of estuarine, coastal, and marine systems to enhance the conservation and restoration of wetland, benthic, and aquatic areas of EFH.
- Explore innovative techniques to determine the functional value of natural habitats and to evaluate the restoration success relative to the fish community rather than solely to the plant community.
- Develop restoration techniques for EFH including corals, salt marshes, and seagrasses; and determine whether habitats created or restored with such techniques are ecologically functional.

I.E. Impact of anthropogenic factors and environmental changes on fish populations

- Continue to engage in joint efforts with state and other Federal agencies to restore the ecological integrity and water quality in Florida Bay, Galveston Bay, and other estuaries upon which fish depend.
- Continue research efforts under the South Florida Restoration Effort, particularly in the areas of modeling fishery dynamics, recovery of protected resources, restoring EFH, and providing support for the Coral Reef Initiative.
- Derive more accurate assessments of fishing and other anthropogenic impacts on living marine resources by incorporating risk and uncertainty into models used to predict natural living marine resource variations.
- Develop techniques and scientific data necessary to support the effective application of precautionary approaches to fisheries management.

- Continue to evaluate the efficacy of marine reserves, no-take and limited-take zones, and time closures as fishery management tools.

II. Conservation engineering research

Recent Accomplishments:

Innovative approaches to BRD design have been developed. For example, SEFSC has conducted in situ observations of red snapper behavior during shrimp trawling to aid in the design of more effective BRDs and has successfully led efforts to significantly reduce the bycatch of non-target species such as red snapper in the Gulf of Mexico shrimp fishery.

The development and use of improved TEDs is contributing to the recovery of sea turtles, especially Kemp's ridley in the southeastern region.

A recovery model for impacted subtropical seagrass habitats was developed and has been used successfully in court to demonstrate impacts to sanctuaries.

Research Priorities, FY 2001-2006:

- Continue investigations on the importance of environmental cues in the spatial orientation and migration behavior of sea turtles.

- Develop and test new gear technology and fishing techniques to minimize bycatch. The SEFSC continues to explore options to reduce bycatch and mitigate mortality of sea turtles and other non-target species captured in the distant water longline fisheries.

- Develop and test new gear technology and fishing techniques to minimize adverse impacts on EFH. The Center will continue to document the extent and assess the impact of various fishing

gears on EFH in support of conservation and management activities.

- Promote efficient harvest of target species. The Center will conduct investigations into limited access options (e.g., individual transferable quotas (ITQs)) as resource management alternatives that aid increased harvest efficiency are continuing.

III. Research on the fisheries

Recent Accomplishments:

Economic information, analyses, and evaluations were provided for numerous proposed fishery management actions in the southeast.

SEFSC developed and assisted in the collection of economic data through special surveys of the commercial snapper-grouper and mackerel fisheries.

SEFSC, in conjunction with academic economists, contributed to the development of random utility and contingent valuation models of the South Atlantic and Gulf of Mexico recreational fisheries.

Research Priorities, FY 2001-2006:

III.A. Social and economic research

- Include socio-economic related questions in the log book program and increase the use of information such as cost and return data in fisheries management.
- Design and implement procedures to collect socio-economic data on a routine basis. Data would be used to better determine the effects of regulation on commercial and recreational fishers.
- Develop better models of commercial and recreational fisheries to evaluate proposed management alternatives, including limited access systems.
- Estimate economic relationships such as demand curves, production functions, import supply curves, and recreational benefit functions needed to support the evaluation of management decisions.

III.B. Seafood safety research

- Support research aimed at identifying and characterizing marine pathogens, especially viruses, in aquacultured shrimp products, and the extent of viruses in wild shrimp stocks.
- Continue to develop biological and chemical analytical methods for toxic contaminants (e.g., mercury), assess their presence in seafood, and define their impacts on marine ecosystems.
- Improve methods to detect, forecast, and evaluate the ecological significance of harmful algal blooms and their impact on fish stocks, marine mammals, and other protected species.

III.C. Marine aquaculture

- Develop the scientific foundation and technical guidelines for establishing ecologically responsible marine aquaculture.
- Continue to investigate the natural occurrence of shrimp viruses.

IV. Information management research

Recent Accomplishments:

SEFSC has developed and implemented a fully integrated Oracle-based fisheries logbook system.

Research Priorities, FY 2001-2006:

- Develop a fishery database and information management system that will allow the full use of information in support of effective fishery conservation and management.
- Fully integrate the logbook system with the regional permit database.
- Increase collection of observer-based data on bycatch and improved fishery-dependent data (e.g., via ACCSP's program with ASMFC).
- Secure access by constituents and the public to SEFSC information re-sources via web-based technologies.